activated are arranged between a deformable mirror layer and a baseplate. The mirror surface can thus be deformed as a function of the activation of the individual piezoelements.

Provision is also made for the optical component to have different effects on light of differing polarization and/or wavelengths. For example, the optical component could have – in addition to its properties modifying the amplitude, phase, and/or polarization – an at least locally reflective effect on light of a specific polarization direction. The optical component could, again at least locally, influence the polarization of the light in such a way that light of one polarization state is converted to another. This could involve a simple rotation of the polarization direction of the light; a conversion from a circular to an elliptical or linear polarization, and vice versa, is also conceivable. The optical component could, however, also be embodied as a dichroic filter, so that its filter effect acts only on light of a specific wavelength region.

In the claims:

Please cancel Claims 2 and 7.

Claims 17 – 35 have been added.

Please amend Claims 1, 3-6 and 8-16 as follows:

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1. (Amended) A double confocal scanning microscope comprising:
   - at least one light source defining an illuminating beam path with an inherent illumination point spread function (PSF),
   - a detector defining a detection beam path with an inherent detection point spread function (PSF), and

- two microscope objectives for focusing light propagating along the illumination beam path onto a specimen which is disposed in a common specimen plane defined by the two microscope objectives; and
- at least one optical component disposed in the illuminating or detection beam path, wherein the optical component is configured to vary the amplitude, phase or polarization of the light and thereby to modify the illumination PSF of the light in the illuminating beam path or the detection PSF in the detection beam path of the double confocal scanning microscope.

3. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the illumination PSF in the illumination beam path and the detection PSF in the detection beam path shows axially arranged secondary maxima both of which are modifiable as to their shape or position.

4. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is used to increase the distance between a principal maximum of the illumination PSF in the illumination beam path or a principal maximum of the point detection PSF in the detection beam and secondary maxima.

5. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is used to reduce the intensity of the secondary maxima of the illumination PSF in the illuminating beam path or the detection PSF in the detection beam path.

6. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is used to locate the secondary maxima of the illumination PSF in the illuminating beam path or the detection PSF in the detection beam path at different axial positions.

8. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component modulates the wave front of the illuminating light or detection light.

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9. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is disposed in a pupil of at least one microscope objective or in a plane optically conjugated therewith.

10. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is disposed at any desired location in the illuminating beam path or detection beam path.

11. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is an amplitude filter and a phase filter.

12. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is a retardation plate or phase plate.

13. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is an LCD (liquid crystal device) arrangement.

14. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is configured as partially amplitude-modifying elements.

15. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is configured as an adaptive optical system comprising a deformable mirror.

16. (Amended) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is embodied as a dichroic filter that is disposed in the illuminating beam path or the detection beam path.

17. The double confocal scanning microscope as defined in Claim 1, wherein the illumination PSF in the illumination beam path and the detection PSF in the detection beam path shows axially arranged secondary maxima both of which are modifiable as to their shape and position.

18. The double confocal scanning microscope as defined in Claim 1, wherein the optical component is an amplitude filter or a phase filter.

19. A double confocal scanning microscope comprising:
- at least two light sources each of which defining an illuminating beam path with an inherent illumination point spread function (PSF);
- a detector defining a detection beam path with an inherent detection point spread function (PSF),
- two microscope objectives for focusing light of the illumination beam path onto a specimen which is disposed in a common specimen plane defined by the two microscope objectives; and
- at least one optical component arranged in one of the illuminating beam paths and the detection beam path, wherein the optical component is configured to vary the amplitude, phase or polarization of the light, and thereby to modify the illumination PSF of the light in the illuminating beam path and the detection PSF in the detection beam path of the double confocal scanning microscope.

20. The double confocal scanning microscope as defined in Claim 19, wherein the illumination PSF in the illumination beam path and the detection PSF is in the detection beam path

show axially arranged secondary maxima both of which are modifiable as to their shape or position.

21. The double confocal scanning microscope as defined in Claim 19, wherein the illumination PSF in the illumination beam path and the detection PSF in the detection PSF in the detection beam path show axially arranged secondary maxima both of which are modifiable as to their shape and position.

22. The double confocal scanning microscope as defined in Claim 3, wherein the optical component is used to increase the distance between a principal maximum of the illumination PSF in the illumination beam path and a principal maximum of the detection PSF in the detection beam and secondary maxima.

23. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is used to diminish the intensity of the secondary maxima of the illumination PSF in the illuminating beam path and the detection PSF in the detection beam path.

24. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is used to locate the secondary maxima of the illumination PSF in the illuminating beam path and the detection PSF in the detection beam path at positions comprising axial positions.

25. The double confocal scanning microscope as defined in Claim 19, wherein the optical component provided in the illuminating beam path is different from that provided in the detection beam path.

26. The double confocal scanning microscope as defined in Claim 19, wherein the optical component modulates the wave front of the illuminating light and detection light.

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27. The double confocal scanning microscope as defined in Claims 19, wherein the optical component is disposed in a pupil of at least one microscope objective or in a plane optically conjugated therewith.

28. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is disposed at any desired location in the illuminating beam path and/or detection beam path.

29. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is an amplitude filter or phase filter.

30. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is an amplitude filter and phase filter.

31. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is a retardation plate and phase plate.

32. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is a retardation plate or phase plate.

33. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is an LCD (liquid crystal device) arrangement.

34. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is configured as partially amplitude-modifying elements.

35. The double confocal scanning microscope as defined in Claim 19, wherein the optical component is configured as an adaptive optical system comprising a deformable mirror.